

THE UNITED STATES PATENT AND TRADEMARK OFFICE
Application No. : 10/067,938 Confirmation No. : 8443
First Named Inventor : Yutaka MATSUNOBU
Filed : February 8, 2002
TC/A.U. : 3618
Examiner : Frank Vanaman

Docket No. : 056203.49196DV
Customer No. : 23911

Title : Hybrid Electrical Vehicle Employing Permanent Magnetic
Type Dynamo-Electric Machine

PRE-APPEAL BRIEF REQUEST FOR REVIEW

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Commissioner for Patents
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Sir:

This is a pre-appeal brief request for review.

The sole issue to be decided concerning the final rejection is the ability of the references to be combined and more specifically the disputed showing of the references. Claim 18-21 are rejected under 35 USC 103 over the references to Kawakatsu (US 4,335,425), Tadahiro et al (JP 8-33246) and Brown et al (US 5,989,146).

Claim 18 recites a hybrid vehicle having a permanent magnet dynamo-electric machine, and an engine connected to one side of the permanent magnet machine. The permanent magnet machine includes a stator and rotor with the rotor including permanent magnets inserted in an insertion hole as shown in Figure 1. The insertion hole is inclined at a predetermined angle (FIG. 13 submitted with response of December 2, 2003 and approved for entry) in a circumferential direction so that shape of rotor in the circumferential direction is asymmetrical and wherein a ratio between a maximum torque in the forward rotation output by said permanent magnet dynamo-electric machine at a time

when the hybrid electric vehicle moves forward and a maximum torque in a backward rotation output by said permanent magnet dynamo-electric machine at a time when the hybrid electric vehicle moves backward establishes a relation 1:1.05-1.2, whereby the maximum torque in the backward rotation of said permanent magnet dynamo-electric machine becomes greater, and a distance from said rotational gap in the forward rotation side becomes greater than a distance from said rotational side becomes greater than a distance from said rotational gap in the backward rotation side, whereby a magnetic flux density of said permanent magnet in the forward rotation side becomes lower than a magnetic flux density of said permanent magnet in the backward rotation side.

Claim 21 is directed to the permanent magnet type dynamo-electric machine for a hybrid having the same limitations with respect to the permanent magnets and the holes as in claim 18. Claims 19 and 21 depend from the claims 18 and 20.

The Examiner maintains the rejection despite the final rejection indication that Kawakatsu has “no forward/reverse switching gear “and “fails to teach the motor as being a permanent magnet machine having a stator” or a plurality of magnets with the rotor being non-symmetrical or a slot inclined so as to be at a greater distance from the rotor circumference on a a side associated with one rotational direct. Thus it is admitted in the Final rejection that none of these numerous features are in Kawakatsu. Tadahiro was cited for teaching a plurality of permanent magnets in openings inclined at an angle with the Examiner concluding that it would have been obvious to “provide the non-symmetric configuration of the magnet insertion openings as taught by Tadahiro et al to a convention permanent magnet motor structure usable in the vehicle of Kawakatsu”. Still further this combination, according to the reference still fail to teach a rearward torque as being greater that a forward torque. Brown is cited for teaching a reverse gear with the lowest speed/highest torque relationship,

generally a higher torque relationship than even the first forward gear. The final conclusion is that it would have been obvious to arrange the motor so that the higher torque direction is associated with reverse drive direction.

Although Claims 20 and 21 were also rejected using only the references to Takahiro and Brown, the following argument will address the rejection which includes all three references:

Tadahiro '246, in contrast to the presently claimed invention, discloses a rotor in which a permanent magnet is inserted in a permanent magnet insertion hole which is inclined downward in a rotational direction of a motor (forward rotation direction). This permanent magnet insertion disclosed in Tadahiro is inclined in this downward direction in order to intensify the magnetic flux of the permanent magnet in the forward rotation direction. Additionally, the leakage flux preventing hole is provided between the permanent magnets adjacent in the circumferential direction in order to prevent leakage flux from the permanent magnets.

The present invention reduces the magnetic flux (effective magnetic flux) of the permanent magnet running into the stator side and the forward rotational direction in order to lower the magnetic flux density of the permanent magnetic, which is an entirely different concept from Tadahiro in which the leakage flux preventing hole is provided for preventing leakage flux from the permanent magnet.

The Advisory Action of September 27, 2005 indicated that "the Examiner does not disagree with applicant's assessment of the reference to Tadahiro".

Kawakatsu '429 discloses a parallel type hybrid electric vehicle with no discussion or disclosure of the permanent magnet type dynamo-electric machine claimed in the present invention. Additionally, the '429 reference discloses a conventional transmission having both the forward and backward changing gear. Applicant's submit that the specification at column 5 line 66 through column 6 line 3 indicates that the output of the motor/generator 7 is coupled through a transmission means such as a differential gear to the wheel shaft and thus the wheels to establish a power train of the engine/electric hybrid vehicle. One skilled in the art cannot assume that this means anything other than a conventional transmission with forward and backward changing gears and thus Applicants renew their submission that even if the references are combined the present invention would not result as the only teaching of "429 with regard to the present invention is that of a hybrid vehicle. One skilled in the art would not ignore the object, purpose and result of the references as he does not have the benefit of applicant's disclosure to rely on.

Brown '146 discloses a transmission for a four-wheel drive with a relationship whereby the torque for the backward drive is greater than the torque for the forward drive, but has no disclosure of a permanent magnet type dynamo-electric machine as described and claimed in each of independent claims 18 and 20.

Neither Tadahiro nor Brown are concerned with a hybrid vehicle and the preamble to the claims may not be ignored when considering the obviousness of combining references.

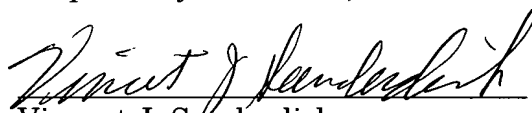
It is therefore submitted that the state rejections do not make a proper, *prima facie* case of obviousness because there is no motivation to modify the references and that, even if, for purposes of argument, they were combined, the claimed invention does not result.

Independent claims 18 and 20 clearly provide structure not shown or disclosed or made obvious by the references or their combination even if, for purposes or arguments, the references could be combined.

If there are any questions regarding this Request for Review or the application in general, a telephone call to the undersigned at 202-624-2838 would be appreciated since this should expedite the prosecution of the application for all concerned.

Respectfully submitted,

November 9, 2005


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